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ABSTRACT

An effort to foster intergenerational bilingual literacy by setting up technology-mediated partnerships between geographically distant parents of school children is described. The ethnic and linguistically minority parents who participated were from San Diego; Denver; and Caguas, Puerto Rico. This partnership between distant parents is part of a larger computer-based network of teacher partnerships called ORILLAS, which is coordinated by Brooklyn College of the City University of New York and the University of Puerto Rico. The parents were invited to learn how to use computers with their children and in the process to communicate with other parents and children. The resulting communication and teamwork based on sharing of skills is described, including the value of Spanish language proficiency. Bilingual booklets and books (including a book of proverbs) were developed jointly, as were a community newspaper and a collection of articles on technology and self-esteem. Previous formal research into ORILLAS teacher partnerships is reviewed. Contains 20 references. (LB)

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Putting a human face on educational technology: Intergenerational bilingual literacy through long-distance partnerships between parents of school-age children

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

This chapter describes an effort to foster intergenerational bilingual literacy by setting up technology-mediated partnerships between parents of school-age children over long distances. The ethnic and linguistic minority parents who participated in this effort were from San Diego, California and Denver, Colorado in the United States and in Caguas, Puerto Rico. This partnership between distant parents is part of a larger computer-based network of *teacher partnerships* which is coordinated by two Schools of Education, the first at Brooklyn College of the City University of New York, and the second at the University of Puerto Rico. The network's name, "De Orilla a Orilla" (Spanish for "From Shore to Shore", and usually shortened to ORILLAS) was chosen to reflect the reality of teacher collaborations that span oceans and continents.

However, the Spanish name "ORILLAS", while highlighting the network's origin in Puerto Rico, nevertheless obscures its multilingual identity since teachers and students (and recently, parents) communicate in, among other languages, French, Haitian Creole, English, Spanish, various English-based Caribbean Creoles, and American and French Canadian Sign Languages. ORILLAS is most definitely multinational; indeed, a hundred team-teaching partnerships have been formed, principally between educators in Puerto Rico, Quebec, and the United States, but also including teachers in English-speaking Canada, Costa Rica, France, Japan, Mexico, and several French- and English-speaking islands in the South Pacific.

While ORILLAS teacher partnerships began in 1985, partnerships between parents and between parent-child dyads within ORILLAS have only been initiated in the last several years. The network has been overwhelmingly concerned with distance "team-teaching" projects, often employing computer-based electronic mail. That is, partner teachers communicate regularly to plan and implement jointly-executed, collaborative teaching projects between their classes. Typical projects have included: (1) shared student journalism and publishing; (2) comparative research, including dual community surveys, joint science investigations, and contrastive geography projects; and (3) both traditional and modern folklore compendia, extending from oral histories and collections of proverbs to children's rhymes and riddles, lullabies and game songs, as well as fables and folktales.

To coordinate their collaborative "works-in-progress", teachers use

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electronic mail to stay in frequent contact and to transmit their students' work. While using up-to-date technology, ORILLAS has employed an educational networking model first developed by the French pedagogue C
lestin Freinet in 1924 (Clandfield & Sivell, 1990; Lee, 1980, 1983; Sayers, 1988b). Following Freinet's model, ORILLAS is *not* a student-to-student penpal project, but rather a class-to-class collaboration designed by partner teachers who have been matched according to common teaching interests and their students' grade level.

Given the class-to-class focus of ORILLAS, it is therefore not surprising that teacher collaborations and student projects, rather than parent partnerships, have received the greatest share of attention from the educational research community. For example, ORILLAS has been described as an exemplary curricular project for bilingual education programs (Cummins, 1986, 1988, 1989; Cummins & Sayers, 1990; Faltis & DeVillar, 1990; Figueroa, Sayers & Brown, 1990; Sayers & Brown, 1987), English as a Second Language programs (Cazden, 1985), foreign language programs (Green, 1990; Willetts, 1989), and writing programs (Figueroa, 1988). The network was also cited as an noteworthy project for linguistic minority students by the U.S. Congress Office of Technology Assessment (Roberts & staff, 1987).

> [L]ong-distance networking capabilities of computer-based technologies are being used to encourage [these] students to write and communicate more effectively in highly functional contexts, both in their native language and in English. When used in this context, the computer can provide a means for students to break out of the traditional mode of thinking, to enhance their sense of mastery, and to enrich the learning experience by providing access to role models and speakers from their native culture" (p. 96).

Finally, DeVillar and Faltis (1991) judged ORILLAS "certainly one of the more, if not the most, innovative and pedagogically complete computer-supported writing project involving students across distances" (p. 116).

In addition, there have been several research studies of ORILLAS teacher partnerships, encompassing both qualitative (Sayers, 1987, 1988a, 1991) and quantitative research designs (Sayers, in press). To date, no formal research study has centered on long-distance parent collaborations mediated by technology. However, we have conducted an informal study (based on observations completed over the course of a full academic year, together with interviews of teachers, parents and their children, and numerous videotapes) at an after-school "Parent-Child Computer Course" offered at Sherman School in San Diego, California, one of the ORILLAS sites which formed a parent partnership with similar after-school groups in Denver, Colorado and Caguas, Puerto Rico. We believe that the results of our informal investigation of parent partnerships illustrate many of the findings of the more formal studies of teacher collaborations in ORILLAS, with intriguing implications for family literacy programs with minority language parents and children.

The Sherman School After-School Computer Course for Parents and their Children: A Portrait

Sherman School is located in Barrio Sherman in San Diego, California

in a neighborhood principally composed of African-American, Latino, Cambodian, and Euro-American communities. There have been many attempts by educators from Sherman School to involve parents in school activities and to establish literacy classes for the parents of the children at this school; indeed, these have been among the highest priority for educators at Sherman. However, owing to a number of factors, familiar to all who have worked with low-income immigrant adults, many difficulties had been confronted. For example, heads of single-parent families often work long hours or during second or third shifts and have little time to devote to school-based activities, such as the Parent Teacher Organization or parent-teacher conferences. Teachers affirm that in spite of high expectations and great concern expressed by most parents for their children's success in school, few parents actually get involved in school-community outreach efforts.

Language differences and wide language variation posed barriers between school professionals and parents; not only are parents of limited proficiency in standard English, they are from a number of language and dialect backgrounds, including Spanish, Khmer, and Black Vernacular English (BVE). Inside the family unit, most parents are devoted to improving the quality of life for their own family; but within Barrio Sherman, sharp divisions between community members are revealed in the frequent strife between gangs which pits the Cambodians and the African-Americans, in an uneasy alliance, against the larger Latino community. Drug abuse in the community is also a major destabilizing force, and an overriding concern of both teachers and parents is to make Barrio Sherman a safer place to live through confronting the drug problem.

At the start of the 1989-90 school year, a new attempt was made by the Sherman School to establish literacy classes for adults in the community. Both the teacher of this literacy class, Maria de Lourdes Bouras, and the school contact person, Laura Parks-Sierra, had worked extensively with students in the ORILLAS Project in previous years, and had discovered the effectiveness both of using computers with a variety of comunication activities and of having students work in teams. Together, they made the decision to design their literacy class for students *and* their parents. The design of the literacy course would be similar to the approach they had already used in ORILLAS: local partners would work on the computer, learning to use it both as a writing tool (word processing) and as a communication tool (telecommunications). Next, the many partners who made up the Sherman School literacy course would form another kind of partnership with a distant "sister classes", using electronic mail. Finally, what they wrote would eventually be published locally in a newsletter distributed in the community. The only difference between previous ORILLAS' projects and this literacy course would be that this time the local partnerships would be made of a parent and his or her child.

This decided, an evening "computer" class was announced during regular school hours to all second- to sixth-grade students. There would be no cost to join, but it was clearly stipulated that students had to be accompanied by one or more parents for each computer class. The teachers reported that, unlike other messages designed to reach parents (often "lost" due to language differences or incorrect addresses given by worried parents with uncertain immigrant status) this announcement was efficiently delivered to their parents by Sherman's students, for whom "computer time" was a favorite school activity. On the first night, dozens of parents appeared, and even more unaccompanied students; however, the teachers maintained their

"parent-child partnership" policy and turned away those students who had not brought parents. Parents who enrolled commented that they were tired after long days at work and of caring for families, and would not have attended except for their children's insistence.

Teachers said that parents were intrigued with the prospect of learning how to use computers with their children, particularly the idea of communicating with other parents and children in far-off places like Colorado and Puerto Rico. They were especially interested to hear that other parents were involved in similar projects, and many who had seen little of the United States were curious about life in these distant places. They liked the idea of helping their children in school and also of helping them acquire technology skills. Students who attended received a certificate to deliver to their regular classroom teachers the following day, where the names of the parent and child were clearly printed; classroom teachers had agreed to announce the names of parents and children who had participated in the initial literacy classes, to encourage continued attendance.

At the outset, there were some difficulties just in learning to use word processing and other software. Explanations to the group seemed labored: the teacher was bilingual (English-Spanish), but English speakers initially expressed some impatience at having to wait during translations, at the time thus "wasted" or "taken" from more important, computer-related tasks. Parents were at very different levels of English proficiency. Moreover, Ms. Bouras reported her sense that, during initial computer projects, whoever was at the keyboard assumed control, creating barriers for others to join in as full participants.

Two Emerging Themes: Communication and Teamwork based on Sharing of Skills

Yet once communications from the distant parent groups began to arrive, some interesting changes seemed to take place in parents' and students' attitudes, both toward engaging in computer-based collaborations and toward language use. The teacher and school contact person insist that parents and students began to see the computer as a tool for communication. In this regard, they began to evidence more comfort with the new technology, since communication was something everyone understood and felt competent at. The group, faced with the task of representing and describing San Diego in response to the initial questions of the distant groups, became more cohesive.

To help introduce themselves to their partner groups in Colorado and Puerto Rico, the Sherman School parents and children decided to make and send a "cultural package" that featured a book to which everyone could contribute, regardless of their level of literacy in their mother tongue or in English. For example, the Cambodian family in which parents could not speak, read or write in English brought in the most magazine articles and pictures. Together, parents and their children elaborated a clear picture of the book they wanted to send; the parents and children worked in teams to create the different sections and then shared their writing and the pictures they had gathered with the rest of the group. By the time the parents had helped one another and the children had helped their parents, the cultural package book had become a "seamless" group product where the individuality usually expressed in the concept of "authorship" had become unimportant.

Moreover, the status of the Spanish-speakers changed when the majority of the text began arriving in Spanish. Ms. Parks captured on video tape the first night the group logged on to the electronic mail system to read messages. Parents and children were pulling their chairs as close as possible to the computer, waiting for the phone call to go through. Soon the electronic messages from Colorado and Puerto Rico began to appear, letter by letter, on the screen as though the computer had become a teletype machine. When Ms. Bouras translated the messages from Spanish, the English-speaking parents started questioning her and other Spanish-speaking parents to make sure that they understood everything; in Ms. Parks-Sierra's words, "These discussions really seemed to bring the group together."

Suddenly, proficiency in Spanish became highly prized as the texts which everyone in the course was so interested in reading were written in Spanish. The English-speakers, rather than relying on the teacher exclusively for information, would turn instead to Spanish speakers. As text arrived in Spanish, English-speakers saw the importance of devoting time to translation, even insisting that translation be done carefully to ensure that everyone understood the messages. English-speaking parents who previously had worked on their own, sought seats next to Spanish speakers, and were active in assuring that the teacher had translated every detail (at times, "double-checking" with their local bilingual expert).

Unlike previous literacy courses sponsored by the Sherman School, attendance the Parent-Child Computer Course justified continuing the class for the entire academic year. Parents and children attributed this, in large part, to the communications with the faraway parent groups. There was great curiosity about what the distant partner classes would write. Parents and students said that they did not want to miss class in case any electronic mail might have arrived from the other groups. Evidently, their distant correspondents felt similarly, as shown in this message from Denver:

> Hi! My name is Guadalupe and I have a sister her name is Claudia. Colorado is a very nice place to live in. We're here tonight because we came to write back to you! ...
>
> Sincerely,
>
> Guadalupe and Claudia Ortiz. (February 12, 1990)

Another factor may have been the prestige associated with working in a project that focused on international communication. Ms. Bouras reported that several parents told her that when they got together with friends and family over the weekend and they had mentioned their using the computer to write to parents in Puerto Rico and Colorado, their friends had been very impressed. The Sherman School parents seemed honored that people from so far away would be interested in what they had to say, and therefore they worked hard both on their electronic messages and on the book for their cultural package, in order to give the distant parents the clearest impression of Barrio Sherman, Sherman School and San Diego.

Before the end of the academic year, the Sherman School parents had collaborated in the production of numerous highly literate publications. A description of these publications, followed by sample writings, illustrates the range of emergent literacy skills being shared between parents and their children. Please note that original spellings have been maintained

throughout and, except where indicated, that translations are those provided by parents and children. The Sherman School Computer Class published:

(a) A bilingual booklet of parent-teacher conference guidelines distributed to all of Sherman School's parents and teachers -- an outcome of close consultation with several teachers.

> "Tu participacion es importante: Que es una conferencia familiar?
>
> Una conferencia familiar es cuando nos reunimos con los maestros de nuestros hijos para hablar sobre su aprovechamiento escolar y su comportamiento en la escuela. Es el momento de aprender mas acerca de nuestros hijos y sus maestros. ...
>
> Let's Lead the Way: What is a Family Conference?
>
> A family conference is an update on your child's progress and to discuss their future goals. It is a network between teacher, student and parents."

(b) Bilingual books, including a parent-child guidebook to San Diego for the Sherman School Library's permanent collection, and for the Puerto Rico and Colorado parent groups, describing interesting places for families to visit in San Diego -- the result of collaboration between children and their parents.

The San Diego Zoo

> "I like the San Diego Zoo because it is a very nice place to go and you can see a big snake and a tall giraffe. In the San Diego Zoo you can find a lot of animals like rabbits, polar bears, big brown bear, and the eagles in the trees. The tallest animal of all is the giraffe and the fattest animal of all is the elephant.
>
> There are huge bears also. The animal I like most is the giraffe because it is tall. My mom likes the monkey the most. ... The tigers like meat and they are very big. The best thing I like about the tiger is that it runs fast and has sharp teeth because I would like to have sharp teeth like that too. My mom hates the tiger because it kills animals and people. The San Diego Zoo is like the San Diego Wild Animals Park because they have almost the same numbers of animals. The trolleys look the same."
>
> -- Keovong Sar & Eam [A Cambodian son and mother.]

(c) An international "refranero" or book of proverbs, for which parents consulted with their extended families to create lists of proverbs (and how they are used) that were shared with the parent partner groups as well as all the other teacher partnerships in ORILLAS -- a consequence of sharing among families, the local community and the wider world of ORILLAS participants.

> "Proverbio: DIOS APRIETA PERO NO AHORCA
> [Translation: God may squeeze you but he won't choke you.]
>
> Explicacion: por que cuando tiene uno algun problema siempre ay alguna

forma para resolberlo con la bolunta de dios. [Because when one has some problem there is always some way to solve it, God willing.]

Situacion: un dia andabamos tres amigas en un carro y tubimos un acidente con un troque de la Cuidad y quedamos atrapadas y una de nosotros dijo no te preocupes dios aprieta pero no ahorca i fue sierto porque no nos paso nada todos salimos bien porque nadie salio golpeado grasias dios." [One day two friends and I were driving and we had an accident with a City truck and we were trapped. One of us said not to worry "Dios aprieta pero no ahorca", and that was true, because none of us were hurt, thank God.]

-- Emely Guzman E., Isabel Garcia [Mexican-American mothers]

(d) An international collection of articles on self-esteem and technology -- for which the Sherman School Computer Class worked with professors and graduate students from Harvard University Education School as well as psychologists, teachers, and other parents and children from Argentina, Mexico, Puerto Rico, Quebec and the United States.

"I think that a computer is good for children as well as adults because it let you put down your thoughts and feelings and express your opinions. ... I thing it's great that the children are learning about computers and how they work and how to use them and write their own stories and to read what they have written. I think it gives them a good feeling inside to know that they did it and that they are as important as we are.

-- Christyl McCorley
[African-American with 2 children in Computer Class].

"In respons to the question, on learning by thecnology, it is my personal belive, that it is a good way to prepare are children and owr selfs, to meet the future for it is chainging dayly, it is nothing to be afreid of, it is like turning on your television or dialing you'r, phone the deferance is that here you are apon samething new, and if you do not have similiarity with the equipment, it natural to feel unease about thecnology.

1. In the case of computers, at first you may feel not capable to be able, to manipulate it's sistem, as you start plaing the key board, you begun to gett amuch better feeling about wath you are doing, it then becomes a chalange betweing you and the sestem, until you are able master it.

2. It is also useful in teaching, for it helps to support a subjet, by bringing in graffic suport to the teacher, to esplain better, and helping the students to understand better the subjet."

-- Hector Reynoso [A Mexican-American parent]

Why I like Computers

"When I use the computer I fill nervous inside my body because when you start to use a computer you really have to get ready. I think computers help students because if they do not know how to read the computer help

him or her to say it. I think computers are important because if someone does not have a phone and they only have a computer and they could use the computer to call the people they want to call. The computer was after all made for children to help them learn. I like computers and I wand to know more about computers."

-- Keovong Sar & Eam [Cambodian son and mother.]

(e) A community newspaper -- the product of collaboration with teachers and administrators and children at Sherman School.

"Exemplary Mother [An anonymous article written by other parents]

Eam is originally from Cambodia, she is medium high has a beautiful black hair and is always smiling. She started coming to the computer class almost from the beginning She never missed a class and she always had a positive attitude toward everybody. Eam looks so young that you will never beleive she is thirty six years old. She was a mother of nine children, but three of them died in the war in Batanbag, in Cambodia.

Eam was 15 when she got married, eventhough this sounds too young, this is normal for Cambodians. ... Eam didn't want to have children right away but contraceptive methods were not very advance in Cambodia so she got pregnat right away. Her new family grew fast and she had to work harder and harder, since in Cambodia your children depend very much from the mother's care. It was fascinating talking with Eam and getting to know such a different culture, but what makes this story more facinating is the fact that no matter where in the world we are or where do we come from the importance of being a caring and loving parent is always the key for our future generations. And Eam is one of this great mothers that has helped six children grow up with an incredible future in front of them."

In a very real sense, these publications by parents and children would not have been possible without their electronic partnerships, since each formal publication was preceded and accompanied by informal dialogues among themselves and with distant classes, to identify issues and topics for writing, to test developing ideas, and to elaborate drafts.

Throughout the 1989-90 academic year, parents and children in the Computer Class worked in teams. To be sure, all teams did not function identically. Some parents and their children "shared" equally all stages of writing (prewriting, drafting, and revising and editing) and translating (from their home language to English and back). Other teams divided the writing task in a variety of effective ways, with some parents playing the key role of topic "definers" in the home language while their children acted as keyboardists and language interpreters and "refiners" in English. Certainly, all parents and children, while working in teams, showed evidence of moving toward greater independence; as an example, for the year's final project, the community newspaper, every parent submitted articles for publication. Perhaps the term "teamwork" does not adequately convey the complex literacy activities which developed among the Sherman School parents and children as a result of their collaboration with distant ORILLAS parent-child groups.

These occasions provided by ORILLAS for displaying literacy may better be viewed as sequences of nested, interlocking collaborations. Let us take as an example an introductory letter written early in the year to distant parent groups by Eam (the Khmer-speaking 36-year old Cambodian "Exemplary Mother"), Keovong (her bilingual son), and Maria (his Spanish-English bilingual schoolmate).

> Dear Parents and children,
>
> Our names are Keovong, Maria and Eam. I am Keovong the one that is typing because I am good at typing. I was bornin Phillipines and my parents are from Cambodia. My mom come to computer class. My mom is writing in Cambodian and someone will translate it in English or Spanish. My dad used to come with me to the computer. Many of my people had died in Cambodia. My land has been taken by the bad people. But now I am far away from my home land and I am safe in San Diego ...
>
> Your new friend,
> Keovong Sar, [October 1990]

Clearly, this text have evolved from a rich, intergenerational learning situation with great potential for fostering biliteracy skills: a mother and her son (and in the first writing, a Spanish-speaking friend) seated together at a computer, using two languages to plan what they will co-author, and sharing linguistic, cultural or technical talents at which one or another is more skilled.

This was the just first stage in the "sequence of nested collaborations". Next, the writing had to be rendered into Spanish by Maria so that it could be shared with other Spanish-dominant parents for discussion prior to sending it over the electronic mail system. This involved a focused collaboration between the bilingual (English-Khmer) child and other bilingual (Spanish-English) parents and children. Of course, the second collaboration had a clear goal: the linguistically accurate and culturally faithful rendering of what the original collaboration had set out in writing. Other nested collaborations followed in interlocking sequence once the San Diego group had sent their message out. For example, parents and children in San Diego and the other ORILLAS sites often sent messages out only in the original Spanish or English; that is, they did not copy into the computer their translations of writings, using them strictly for internal discussion. Therefore, whenever a message was received, a further occasion for translation naturally arose, leading to new sequences of nested and interlocking collaborations.

Previous Formal Research into ORILLAS Teacher Partnerships

All four studies on ORILLAS Teacher Partnerships -- three qualitative studies (Sayers, 1987, 1988a, 1991) and a quantitative study (Sayers, in press)-- have involved bilingual program students of Puerto Rican heritage who used computer-based telecommunications to build literacy skills in both their mother tongue, Spanish, and their second language, English. The three qualitative studies were conducted in a New England urban school district with a long record of advocacy for the educational rights of language minority students. The studies underscored the heterogeneous character of bilingual classes. In this city, the typical composition of a 4th or 5th

grade bilingual class is 25% Spanish-dominant new arrivals, together with 75% bilingual and English-dominant students who are frequently in their last year of bilingual schooling. The Spanish-dominant children were all born in Puerto Rico, while most of the English-dominant children were born in the United States. All students in the pilot studies, regardless of their language dominance, were from Puerto Rican families and spoke Spanish in their homes.

The qualitative studies also revealed that instructional delivery in "bilingual" classrooms at this level was predominantly in English, which placed the Spanish-dominant students at a marked disadvantage *vis-a-vis* their bilingual and English-dominant classmates. Spanish was principally used by bilingual teachers for quick summaries and to ask for questions on material previously covered in English. The negative language attitudes of the English-dominant students toward their Spanish-dominant classmates was revealed in direct commands ("Talk English!"), deprecatory comments ("I can't understand you when you talk that Spanish") and through critical remarks upon hearing Spanish spoken by Spanish-dominant classmates ("I wish they wouldn't talk so fast that way"). Negative attitudes toward Puerto Rican culture were exemplified by one US-born Puerto Rican student who was English-dominant when the topic was raised of "personas ilustres puertorriquenas" (famous Puerto Rican historical figures): "What' she talkin' about? We don' got none of those 'round here" (Sayers, 1988a).

All three qualitative studies focused on student-directed small groupwork activities as a vehicle for promoting the simultaneous development of literacy in both the home and second languages. The small groupwork activity investigated was student-directed Editorial Boards. In this activity structure, students in both partner classes are nominated for Joint Editorial Boards which plan, coordinate, and supervise the production of a common bilingual newsletter.

In the initial study (Sayers, 1987), the partner class exchanges were between a 5th grade bilingual program class in New England and another bilingual class of the same grade level in California. All the students in the New England class were from Puerto Rican families who spoke Spanish at home, but for most of these students the dominant language for school activities was English. The California students were in a "two-way" bilingual program, and half the students were Anglos whose parents had placed them in the bilingual program to learn a second language. The rest of the students were from Mexican-American families who spoke Spanish at home, as did their New England counterparts; similarly, most of these students also easily interacted in English during school hours. Students in both New England and California classes had been nominated for the Joint Editorial Boards by their teachers, with no regard for their relative proficiency in English and Spanish. Thus, it is not surprising that the amount of written communication in Spanish which resulted from the exchanges between these particular partner classes was minimal; there was little reason to tap the relatively weak, emerging Spanish skills of the Anglo students in California or the decaying first language skills of the English-dominant Latino students in both partner classes, especially if English was the more easily employed "coin of the realm".

In the other qualitative studies (Sayers, 1988a and 1991), the same New England teacher was teamed with a teacher from Puerto Rico; moreover, in the New England classroom, all Spanish-dominant students were assigned to the

Joint Editorial Board and matched in number by students nominated by the teacher. A major finding of the second study was that, in the context of Editorial Board exchanges with a Puerto Rican partner class conducted entirely in Spanish, the prestige of the Spanish-dominant Editorial Board members increased, both in their own estimation and in that of their bilingual and English-dominant peers. The Spanish-dominant students became "language and cultural experts" whose skills were much sought after by their English-speaking classmates.

The quantitative study (Sayers, in press-a) focused on change in language attitudes among 89 students in four elementary-school bilingual program classrooms toward speakers of their home language, Spanish. Once more, the students participated in technology-based long-distance exchanges in partnership with students in Puerto Rico. The research contrasted two instructional approaches, one centering on student-led Small Groupwork and another emphasizing teacher-facilitated Whole Groupwork. The study sought to determine under which of these two conditions is increased status and prestige conferred upon speakers of the minority language. Students were identified as Spanish-dominant, Bilingual or English-dominant on the basis of holistically-rated translation tasks, teacher assessments, and their performance on reading comprehension tests in both languages. Both "sociometric" and "stereotypic" measures of language attitude change were employed.

Two measures of the dependent variable, change in language attitude, were employed. For the Cross-"Language Dominance Group" Inventory, students employed photographs of classmates as markers and individually rated, using a 4-point continua, her or his classmates on five attributes: how hard-working, how friendly, and how easy to work with they are, as well as how helpful they are to the evaluating student, and how helpful they are to the teacher. For the Matched Guise task, two "guises" (a Spanish and an English version of a short narrative) were read onto an audiotape by a bilingual Puerto Rican girl unknown to the subjects. Students listened to the tape in groups and evaluated the Spanish and English recordings on a 4-point scale for four constructs: correctness, the listener's personal identification with the speaker, appropriateness for school, and likelihood of achievement.

Analysis of Variance (ANOVA) by regression yielded results which confirmed the research hypothesis that improvement in students' language attitudes toward Spanish speakers would occur in all classes, suggesting that technology-mediated exchanges with distant colleagues from the students' "mother culture" indeed constitute an intervention which can produce language attitude changes even over a brief period of five months. Results from the "sociometric" Cross-Language Dominance Group Inventory supported the prediction that greater improvement would occur in Small Groupwork classes, while the "stereotypic" Matched Guise indicated greater improvement in the Whole Groupwork classes.

Implications for Intergenerational Bilingual Literacy Projects

First, one implication of this research into teacher partnerships that also appears relevant for parent-child partnerships is the importance of between-class variables, that is, of "finding a productive match" between classes involved in distant collaborations. This is seen clearly in the very different outcomes of the initial qualitative study of an ORILLAS

exchange and the remaining qualitative investigations. Partnerships between teachers of a New England bilingual class and a California two-way bilingual class did not create a context conducive to the promotion of Spanish and English simultaneously, since English was the majority language in both communities, as well as the home language of many of the California students. This situation changed when a match was formed between the New England bilingual class and a class in Puerto Rico, where Spanish was the dominant language used both at school and in the children's homes.

In this latter situation, namely involving partnerships between a U.S. teacher and a Puerto Rican colleague, a learning context was established which *privileged* both Spanish language competence and awareness of Puerto Rican culture. The prestige of the Spanish-dominant new arrivals was enhanced in the eyes of their classmates as they became "cultural experts" who were in a particularly advantaged position to help interpret and clarify messages from their Puerto Rican partner class. At the same time, the balanced bilinguals played a special role as translators, in the most profound sense, of both linguistical and cultural knowledge, working to mediate communications between English-dominant classmates, on the one hand, and both their Spanish-dominant classmates and the distant students in Puerto Rico, on the other.

In this fashion, ORILLAS provided the students with multiple opportunities to display and share their changing linguistic competencies and varied cultural experiences within their classrooms, thus fostering genuine bilingualism and the creation of authentic "cross-cultural" knowledge *between* distinct subgroups of Puerto Rican language minority students. Similarly, the partnerships formed by the Sherman School Computer Class underscores how important *the language used by the distant partner class* can be in prompting closer collaboration between linguistic minority groups, fostering (indeed, almost forcing) repeated occasions for parents and children to to translate for one another, and thus share, their differing cultural and linguistic skills.

Second, a related implication of the quantitative research on ORILLAS teacher partnerships concerns the importance of within-class collaborations. That study established that pairs and small groups of students offer more opportunities for the kinds of interactions that can lead to significant attitude change toward classmates. As we have not conducted a formal study of the Sherman School Computer Class, it is impossible to isolate what specific factors account for the evident success of these long-distance parent-child partnerships as settings for building literacy. However, the parent-child dyads and triads which were formed at Sherman School clearly lent themselves to the type of productive sequences of nested and interlocking collaborations to which we previously referred.

What the experience of the Sherman School Parent-Child Computer Class does suggests to us is that technology-mediated exchanges like ORILLAS can serve as intergenerational learning contexts which make parents partners in the building of their children's literacy, and which help them to become more active agents in the promotion of their own literacy skills. By sharing linguistic, literacy and cross-cultural skills, they are forging tools to empower themselves as they shape their own communities.

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